

stance, impossible to distinguish certain green tree-frogs of the African genus *Rappia* from a *Hyla* unless we cut them open. If they lived side by side, which they do not, this close resemblance would be extolled as an example of mimicry. In reality, it is a case of heterogeneous convergence brought about by identical environmental conditions. One might almost say that tropical, moist forests must have tree-frogs, and that these are made out of whatever suitable material happens to be available."

Continuing their journey by rail, the travellers reached Tehuantepec, on the Pacific coast, where the lower rainfall is evidenced by less luxuriant vegetation, and thence travelled on horseback north-westward on to the southern plateau. On the way we learn a great deal about a variety of topics, including "white ants"; *Anableps dowei*, the "four-eyed" fish; the weaver bird and the method it has devised of suspending its nests from telegraph wires; humming-birds; rattlesnakes, and how they got their rattle, and the exemplary Chontal Indians, who never steal "porque no es costumbre."

In some places the vegetation consists mainly of cacti. After describing the armament of spines that affords them effectual protection, the author reminds us that "cattle and horses, sheep and goats, were all introduced by the Spaniards, and none of the indigenous vegetable-feeders of the plateau, such as stags, squirrels, hares, and mice, can claim to have helped in the evolution of these plants. Are we reduced for an explanation to go back to the extinct fauna? More likely it is one of those cases in which imagination has run away from a more sober and matter-of-fact judgment. It is, no doubt, the case that the conditions prevailing on a high table-land of this kind, subject to prolonged drought, a fierce sun, great and quickly-succeeding changes of temperature, and dust-storms, have produced the characteristics of this family of plants without regard to the animals." We must remember, however, that the Camelidæ and Equidæ must in all probability have formed part of the fauna of Mexico as late as the Pleistocene, as they are found in deposits referred to that period both in North and South America. Some means of defence against these animals would have been absolutely necessary for the preservation of succulent plants in a dry climate where vegetable food was far from plentiful, and it is only reasonable to suppose that the destruction of unprotected forms contributed to the extraordinary development of spines which now characterises the group.

In the second expedition the author and his wife travelled south from the capital by way of Cuernavaca to the terminus of the railway at Balsas. Thence they made their way on horseback over the mountains to a densely wooded portion of the Pacific coast, where they camped on a narrow strip of dry land between a lagoon and the sea. There is a fine description of the nightly thunderstorm which came up from over the sea, a phenomenon of considerable meteorological interest. Unfortunately, in this and many other cases we are not given the date or even the month when the observations recorded were made, though this information would have added considerably to their value.

The illustrations are plentiful and usually clearly reproduced, though one would have wished for more photographs of the phases of animal life which form such an important feature of the text; but with so much compressed into such a brief period it is easy to understand that there was no time for tele-photographic work.

J. W. E.

THE HEADMASTERS' CONFERENCE.

AFTER a school career prolonged to the age of eighteen in one of the great public schools, a youth should possess certain minima of endowment—moral, physical and intellectual. His intellectual assets should include a reasonable proficiency in the use of the English language, the ability to read intelligently at least one other language, a notion of what the study of history really means (with some sense of historical perspective), and acquaintance with some fundamental scientific discoveries, together with an inkling of the importance of the advancement of man's control over his environment. He should have an intellectual interest in at least one subject, not necessarily, nor even preferably, included in his school studies. A charge has been preferred against the schools of failing to equip the majority of the young men who leave their ranks with even this modest minimum of mental endowment, and the authors of this charge include men whose experience and ability lend weight to their indictment. Interest in the headmasters' debates concerning curricula should not at this juncture be confined to the ranks of the scholastic profession.

There were fifty-two headmasters present at the meetings of the conference, which took place at the Merchant Taylors' School, London, on December 22 and 23. The Rev. Dr. Nairn presided, and the larger schools were well represented. It may be well to remind our readers that by its constitution the conference limits its membership to headmasters of schools where a considerable number of boys remain until the age of eighteen or nineteen. A discussion of the proceedings of the annual congress should throw light on the progress being made towards an improved curriculum.

Special interest attaches to the resolutions relating to the age at which the study of Greek should begin. Two years ago the conference declared that this study should be postponed to the age of thirteen or fourteen, and that Greek should not be a subject of the entrance examination at the schools represented in the conference. Forty-two of the leading schools regulate the admission of boys from the preparatory schools by an examination entitled "Common Examination for Entrance to Public Schools." We find that only five of the forty-two schools have definitely dropped Greek, the remaining thirty-seven disregarding the 1906 resolution. On the other hand, seventeen schools exclude science, and the remainder make science optional, usually as an alternative to Latin verse. The practical result is that many little boys in preparatory schools are specialising in classics, and their general education is impossible. In other cases we find (to quote Mr. R. C. Gilson, of Birmingham) "the present stupid method of trying to teach three foreign languages together to little boys in knickerbockers." At the age when the observation of nature and education of motor-centres are of special importance, the public schools insist on the pursuit of Latin and Greek to the practical exclusion of manual and observational training. It is hardly to be wondered at that, to quote Mr. Gilson again, "in the name of teaching Greek the schools were turning out men who could not observe nature." This state of affairs will be remedied to some extent if and when practical effect is given to the resolutions of the conference, which affirmed (1) that the average boy cannot undertake the study of more than two languages besides English before the age of thirteen years without detriment to his general education; (2) it is the duty of public schools to provide classes in which the study

of Greek can be *begun*. There is the more reason for hope that the opinions of the conference will not again be ignored in practice, since the meeting further resolved, on the motion of Dr. Lyttelton, to appoint a committee to confer with the preparatory schoolmasters as to a scheme of studies for schoolboys from the age of nine until about sixteen.

A report presented to the Leicester meeting of the British Association contained recommendations which have been endorsed during the last fifteen months by various meetings of teachers. Without undue precipitancy or rash precision, the meeting decided, "That this conference, while withholding its assent to many details, and in particular to the proposal to postpone the study of Latin to the age of twelve, approves of the main conclusions of the report of the committee of the British Association Education section." It may be hoped that influential headmasters will find some means of translating this approval into action, especially the much-needed improvement of the position of teachers.

Several administrative problems were discussed. The Board of Education was asked to proceed at an early date with the registration of teachers; the suggestion being made that the Registration Council should include representatives of various types of schools. A resolution welcoming the inspection of non-local schools by the Board failed to pass, the previous question being voted by a small majority. Some headmasters desired inspection as a means of bringing the authorities of the schools into closer touch with the Board, in order that the great public schools might take their place in a coordinated system of national education. On the other side, fear was expressed lest compulsory inspection should make the headmaster responsible to two masters, the governors and the Board; any action was deprecated which would diminish or destroy the variety of type of the secondary schools of England. As opinion on this matter appears to be uncrystallised, we may hope that there may be a gradual growth in the number of schools which seek inspection by the Board on their individual initiative. The conference appointed committees to confer with (a) the Army Council, (b) the Oxford and Cambridge joint board. The neglect of German was deplored, and a resolution was carried in favour of dividing the emoluments of entrance scholarships so that the bulk of the money should be reserved to those in need of financial assistance.

Reviewing the deliberations of the conference as a whole, it can hardly be asserted that the need for far-reaching reform of the public-school curriculum has been sufficiently impressed upon headmasters. Reform of the common examination for entrance to public schools is a necessary preliminary. In its present organisation this examination discourages manual training, ignores the æsthetic side of education, and penalises nature-study and experimental science. The plain teaching of physiology concerning the development of the brain and of neuro-muscular systems receives contemptuous disregard. There is a widespread belief that the position attained by a boy on entry to the public school depends almost entirely on his knowledge of the rudiments of Latin and Greek. We do not know of how many schools this is true, but we are certain that proficiency in natural history or physics should be no bar to a boy's efforts to win a good position, and that no implication of intellectual inferiority should attach to the science side of the school. With great earnestness we urge the joint committee of the conference and the masters of preparatory schools to re-model the conditions of the entrance examination, so that young boys may pursue a broad general course, comprising literary, scientific,

mathematical, artistic and manual training. The terms of reference assigned to the committee encourage us to hope for a curriculum containing the studies we have enumerated up to sixteen years of age. If schemes founded on such a basis were adopted by the schools, a partial specialisation during the last two years at school would be compatible with the aim which headmasters no less than their critics have in view, viz. to ensure that the majority of boys should receive during school-life a general education in harmony with the ideas and requirements of the present century.

G. F. D.

BIRDS IN RELATION TO AGRICULTURE.¹

DURING the past few years birds have received an increased amount of attention, for it has become more generally recognised that the whole question of their food supply is of great importance to British agriculture—using this term in its widest sense. There are plenty of individuals who rightly recognise that many of our avian fauna are of much economic value, while there are also, unfortunately, a far greater number who thoughtlessly stigmatise the majority of birds—or at least birds of a certain class, e.g. owls—as useless and harmful. These less enlightened sons of the soil need showing that the majority of British birds are useful, but the showing is far from easy. It has been demonstrated over and over again that the sparrow, or "the avian rat," as Mr. Tegetmeier terms it, is entirely harmful; Yarrell has stated that the kestrel principally subsists on mice; a case is mentioned by Macgillivray in which food was brought to the nestlings by a pair of fly-catchers no fewer than 537 times in a day; and the writer has himself observed a single starling carry food to its young from a grass paddock 18 times in 15 minutes; and hundreds of similar records have served to demonstrate in some sense that many birds are useful, and confer an immense benefit on mankind.

Although individual records are very valuable, they are not of the same importance as a coordinated and duplicated set of records, and the latter has been sorely needed. Mr. Robert Newstead has just made a most important contribution to our knowledge of the food of birds, his memoir on the subject being published as a supplement to the December issue of the *Journal of the Board of Agriculture*. As curator of the Grosvenor Museum, Chester, a large number of birds passed through Mr. Newstead's hands, and he was wise enough to tabulate carefully the contents of stomachs, &c. No special effort was made to collect material, and for this reason the records are, perhaps, the more valuable, since no selection of birds "caught red-handed" was made.

Full notes were also made as to sex, locality, date, &c., and the records are based on 871 *post-mortem* examinations of the stomach contents and the "pellets" or "castings" of 128 species of birds. Field observations bring the records up to more than 1100. The contents of stomachs, "pellets," &c., are arranged under several heads, including insects, divided into beneficial and harmful in their respective orders; animals other than insects, e.g. slugs, birds, fish and other "small deer"; and vegetable food, which includes fruit, weed seeds, grain, &c. The birds themselves are finally divided, on the results of their partiality for given foods, into seven classes, from wholly innoxious and more or less strictly

¹ "The Food of Some British Birds." By Robert Newstead. *Journal of the Board of Agriculture*, December supplement. (Board of Agriculture and Fisheries, 4 Whitehall Place, S.W.) Price 4d. post free.